requiring treatment (ACTION trial): randomised controlled trial. *Lancet* 2004;**364**:849–57.
37 **Margolis JR**, Gillum RF, Feinleib M, *et al*. Community surveillance for coronary heart disease: the Framingham Cardiovascular Disease Survey. Methods and preliminary results. *Am J Epidemiol* 1974;**100**:425–36.
38 **Margolis JR**, Gillum RF, Feinleib M, *et al*. Community surveillance for coronary heart disease: the Framingham cardiovascular disease survey. Comparisons with the Framingham heart study and previous short-term studies. *Am J Cardiol* 1976;**37**:61–7.
39 **McGee DL**, Reed DM, Yano K, *et al*. Ten-year incidence of coronary heart disease in the Honolulu heart program: relationship to nutrient intake. *Am J Epidemiol* 1984;**119**:667–76.
40 **Ducimetiere P**, Ruidavets JB, Montaye M, *et al*. Five-year incidence of angina pectoris and other forms of coronary heart disease in healthy men aged 50–59 in France and Northern Ireland: the prospective epidemiological study of myocardial infarction (PRIME) study. *Int J Epidemiol* 2001;**30**:1057–62.
41 **Gandhi MM**, Lampe FC, Wood DA. Incidence, clinical characteristics, and short-term prognosis of angina pectoris. *Br Heart J* 1995;**73**:193–8.
42 **Richards HM**, Reid ME, Watt GC. Why do men and women respond differently to chest pain? A qualitative study. *J Am Med Womens Assoc* 2002;**57**:79–81.
43 **Blum M**, Slade M, Boden D, *et al*. Examination of gender bias in the evaluation and treatment of angina pectoris by cardiologists. *Am J Cardiol* 2004;**93**:765–7.
44 **Hippisley-Cox J**, Pringle M, Crown N, *et al*. Sex inequalities in ischaemic heart disease in general practice: cross sectional survey. *BMJ* 2001;**322**:832.
45 **Rehnqvist N**, Hjemdahl P, Billing E, *et al*. Effects of metoprolol vs verapamil in patients with stable angina pectoris. The angina prognosis study in Stockholm (APSIS). *Eur Heart J* 1996;**17**:76–81.
46 **Rumsfeld JS**, Magid DJ, Plomondon ME, *et al*. History of depression, angina, and quality of life after acute coronary syndromes. *Am Heart J* 2003;**145**:493–9.
47 **DeWilde S**, Carey IM, Bremner SA, *et al*. Evolution of statin prescribing 1994–2001: a case of agism but not of sexism? *Heart* 2003;**89**:417–21.
48 **Daly CA**, Clemens F, Sendon JL, *et al*. The initial management of stable angina in Europe, from the Euro heart survey: a description of pharmacological management and revascularization strategies initiated within the first month of presentation to a cardiologist in the Euro heart survey of stable angina. *Eur Heart J* 2005;**26**:1011–22.
49 **Fox KM**. Efficacy of perindopril in reduction of cardiovascular events among patients with stable coronary artery disease: randomised, double-blind, placebo-controlled, multicentre trial (the EUROPA study). *Lancet* 2003;**362**:782–8.
50 **Anon**. Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients. *BMJ* 2002;**324**:71–86.
51 **Whincup PH**, Emberson JR, Lennon L, *et al*. Low prevalence of lipid lowering drug use in older men with established coronary heart disease. *Heart* 2002;**88**:25–9.
52 **Britton A**, Shipley M, Marmot M, *et al*. Does access to cardiac investigation and treatment contribute to social and ethnic differences in coronary heart disease? Whitehall II prospective cohort study. *BMJ* 2004;**329**:318.

IMAGES IN CARDIOLOGY

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Angiographic documented dobutamine induced coronary spasm successfully treated by stenting

A 66-year-old diabetic and hypertensive patient receiving chronic calcium channel antagonist (CCA) treatment presented with unstable angina caused by single vessel coronary artery disease (CAD), which was successfully treated by direct stenting of the proximal left anterior descending artery (LAD).

Two days after hospital discharge the patient had typical angina with two episodes of syncope. At the emergency department an inferior myocardial infarction was evident upon ECG (upper panel). Coronary angiography showed patency of the LAD stent and no significant lesion on the right coronary artery (RCA) (lower panel A). In order to assess the possibility of RCA vasospasm we performed an intravenous dobutamine stress test which resulted in a significant mid RCA spasm (lower panel B). The spasm persisted despite stopping the dobutamine perfusion and instituting intracoronary nitrate injection. In view of this life threatening RCA spasm refractory to intracoronary nitrates and oral CCA, we decided to treat the culprit lesion by stent implantation (lower panels C and D) with favourable early and late outcomes.

Dobutamine induced coronary spasm is often suspected after stress echocardiography but has only occasionally been reported at angiography. Our case suggests that in the presence of underlying CAD, variant angina may be a challenging problem. Medical treatment (nitrates or CCA) should be attempted in such cases, but if symptoms persist coronary stenting seems to be the rational option. Spasm may occur everywhere in the vessel, therefore in patients suspected of having medical refractory variant angina, provocation tests should always be performed before stenting, in order to identify and treat the culprit spasmodic segment only.

R F Bonvini
T Hendiri
U Sigwart
ulrich.sigwart@hcuge.ch